TEACHING PLAN: B.TECH. (CSE) SEMESTER – 6TH

SCHOOL OF ENGINEERING & TECHNOLOGY		ACADEMIC SESSION: 2022-23		FOR STUDENTS' BATCH: 2020-24	
1	Course Code	PCC-CSE-310			
2	Course Title	Computer Network			
3	Credits	03			
4	Learning Hours	Contact Hours	03		
		Practical Teaching	00		
		Project, Tutorial & Assessment	00		
		Total Hours	03		
5	Course Objective	1. To introduce students with computer networking. 2. To interact with the services of computer network. 3. To bring in knowledge about wireless technologies. 4. To introduce the computer network standards.			
6	Course Outcomes	1. Students will be aware about computer networking. 2. Students will know about various layers of OSI Model. 3. Students will learn about wired & wireless technologies. 4. Students will learn about the services of different layers.			
7	Outline Syllabus				

7.01	Paper Code	Unit	Introduction	Reference Number	Teaching Method
	PCC-CSE-301	(I)	**INTRODUCTION:** The use of computer networks. Network hardware. LAN's, Man's, WAN's, internet works, Network software, protocol hierarchies, design issues for layers, interfaces and services, Connectionless oriented and connectionless services, service primitives, relationship of Services to protocols, the OSI reference model, TCP/IP reference model, comparison of OSI And TCP/IP reference model.		Whiteboard, PPT slides, Tutorials, Demonstration
		(II)	**PHYSICAL LAYER:** The theoretical basis for data communication - Fourier analysis, bandwidth-limited signals, Maximum data rate of a channel, transmission media-magnetic media, and twisted pair coaxial Cable, fiber optics. Wireless transmission, microwave transmission. Multiplexing, switching, Narrow and ISDN - services, architecture, interface, perspective on N-ISDN, broadband ISDN & ATM-virtual circuits versus circuit switching, transmission in ATM networks, ATM Switches.		Whiteboard, PPT slides, Tutorials, Demonstration
		(III)	**DATA LINK LAYER:** Design issues - services provided to the network Layer, framing, error control, flow control, Error correcting & detecting codes, elementary data link protocols, simplex stop and wait Simplex protocols for noisy channel, sliding window protocols - one-bit protocol, go back Protocol, selective repeat protocol. The medium access sub layer - static and dynamic channel Allocation in LANs and MANs, Multiple access		Whiteboard, PPT slides, Tutorials, Demonstration

			protocols - ALOHA. CSMA, collision free Protocols, limited contention protocols, IEEE 802.11 wireless LAN protocols, IEEE Standards 802 for LAN and MANs-802.3 & Ethernet, token bus. Token ring.		
		(IV)	**NETWORK LAYER:** Design issues, services provided to the transport layer, internal organization, comparison of Virtual circuit and datagram subnets, routing algorithms. Optimality principle, shortest path Routing, flooding, flow-based routing, distance vector routing, link state routing, hierarchical Routing, broadcast & multicast routing, 165 congestion control algorithms, general principles Prevention policies, traffic shaping. flow specifications, congestion control in virtual circuit Subnets. choke packets, load shedding, jitter control. IP protocol, IP address. Subnets, internet Control protocols, OSPF. BGP.		Whiteboard, PPT slides, Tutorials, Demonstration
		(V)	**TRANSPORT AND APPLICATION LAYER:** Services provided to the upper layer, Quality of Service, Transport service primitives, elements of transport protocols, addressing, establishing a Connection, releasing a connection, flow control & buffering, multiplexing, crash recovery		Whiteboard, PPT slides, Tutorials, Demonstration
		(VI)	**TRENDS & APPLICATIONS:** Bluetooth protocol stack, Bluetooth connections, piconets and scatternets, Wi-Fi and WiMAX Standard Recent trends and advance topics.		Whiteboard, PPT slides, Tutorials, Demonstration

8	**Course Evaluation**	
8.10	**CA: 20%**	
8.11	**Attendance**	5%
8.12	**Assignment**	10%
8.13	**Quizzes**	-
8.14	**Projects**	-
8.15	**Presentation**	5% (2 Presentations)
8.16	**Any Other**	-
8.2	**Mid-Term Exam. (Internal Assessment)**	20%
8.3	**End-Term Examination**	60%
9	**Textbooks & References**	
9.1	**Textbooks**	**1.** Computer Networks "Mayank Dave" Cengage Learning **2.** Computer Networking – A Top-down Approach Featuring the Internet, "James F. Kurose, Keith W. Ross", 3rd Edition, Pearson Education **3.** Computer Networking "Ed Tittel", Adapted by "B Muthukumaran", Schaum's Outlines (The McGraw-Hill Companies) **4.** Computer Networks "Andrew S. Tanenbaum", 4th Edition, Pearson Education **5.** ISDN & Broadband ISDN with Frame Relay & ATM, "William Stallings", 4th Edition, Pearson **6.** ATM Networks – Concepts Protocols Applications, "Rainer Handel, Manfres N Huber & Stefan Schroder", Low Price Edition, Pearson Education
9.2	**Reference Books**	**1.** Upgrading & Troubleshooting Networks (The Complete Reference), "Craige Zacker", TATA McGraw-Hill Edition **2.** Networking (The Complete Reference), "Craig Zacker", TATA McGraw-Hill Edition

		3. Internet (The Complete Reference), "Margaret Levine Young" 2nd Edition, TATA McGraw-Hill Edition
9.3	**Video References**	**1.** https://www.youtube.com/watch?v=O--rkQNKqls&list=PLbRMhDVUMngf-peFloB7kyiA40EptH1up&index=2&ab_channel=IITKharagpurJuly2018 **2.** https://www.youtube.com/@PowerCertAnimatedVideos **3.** https://www.youtube.com/watch?v=LrUrexb_qLA&ab_channel=NetworkEncyclopedia **4.** OSI Model Explained | OSI Animation | Open System Interconnection Model | OSI 7 layers | TechTerms - YouTube **5.** TCP IP Model Explained | TCP IP Model Animation | TCP IP Protocol Suite | TCP IP Layers | TechTerms - YouTube

Mapping of Outcomes Vs. Topics

Course Outcomes	Program Outcome												PSO			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**	**4**
CO1	3	3	2	3	1	2	1		2	2	1	2	3	3	2	2
CO2	3	3	3	3	2	2	1		1	1	1	1	3	3	2	2
CO3	3	3	3	3	3	2	2		2	2	2	2	3	3	2	2
CO4	3	3	3	3	3	2	2		2	1	1	1	3	2	2	1
CO5	3	2	1	1	3	3	2		1	1	1	2	3	2	3	2